CONTENTS

I. Specification

II. Lay out

III. Drawing of Assembly and parts

IV. Compressed air circuit drawing

V. Operation
1. GENERAL SPECIFICATION

1-1. AN OUTLINE
The basic principles of air balance is the system which used the air keeps its balance against outside pressure. Drum type converts air's rectified movement into a rotary motion so that it lifts up the heavy goods. DSJ-300 is the system which used as it is air’s rectified movements. While compressed air is supplied into the piston chamber, the pressure of chamber increases and pushes down the piston and real drum rotates as piston hoes 호주 and lifts up heavy goods. While chamber pressure is removed the object descends by its weight.

The structure is as follow:

1-2. SPECIFICATION

<table>
<thead>
<tr>
<th>CHECK POINT</th>
<th>SPECIFICATION</th>
<th>CHECK POINT</th>
<th>SPECIFICATION</th>
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<tr>
<td>MODEL</td>
<td>DSJ-300</td>
<td>ROTATION ANGLE</td>
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<td>2336mm</td>
<td>WEIGHT</td>
<td>200Kg</td>
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2. LAY-OUT

2-1. LIMITATIONS OF INSTALLATION

- MINIMUM SPACE & AREA: The minimum area is more than 17.14m because a turning radius of product's arm is R2336 (Refer. Fig. 2-1-1)
The minimum space for from another machine and others is more than 1000mm because it is moved and rotated with weights on the actual working conditions and the minimum height is more than 3030mm

Fig. 2-1-1. Radius of installation

- Reference
  - Weight: 200Kg
  - External size: Height 3030mm × Radius 2336mm
3. DRAWINGS OF ASSEMBLY AND PARTS

3-1. LAY OUT

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3-4. CYLINDER ARM ASS'Y

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16  DSU-CP16 | AIR BLOCK | SS400 | 1    |
15  DSU-CP15 | COVER BLOCK-2 | SB41P | 1    |
14  DSU-CP14 | COVER PLATE | SCP-1 | 1    |
13  DSU-CP13 | COVER BLOCK-1 | N/C NYLON | 1    |
12  DSU-CP12 | STOPPER | N/C NYLON | 1    |
11  DSU-CP11 | WIRE | SUS3 | 1    |
10  DSU-CP10 | IN BLOCK | SM45C | 2    |
  9  DSU-CP09 | BRACKET-1 | SS400 | 1    |
  8  DSU-CP08 | CYL FLANGE | SS400 | 1    |
  7  DSU-CP07 | COLLAR | SCP10A | 4    |
  6  DSU-CP06 | TENSION BAR | SM45C | 1    |
  5  DSU-CP05 | WHEEL | N/C NYLON | 2    |
  4  DSU-CP04 | PIN WHEEL | SM45C | 3    |
  3  DSU-CP03 | LOAD BLOCK | SM45C | 1    |
  2  DSU-CP02 | WHEEL COVER | N/C NYLON | 1    |
  1  DSU-CP01 | SQ FLANGE | SS41 | 1    |
4. COMPRESSED AIR CIRCUIT DRAWINGS

4-1. LAY-OUT

PIPE - AIR PASSAGE

CYLINDER

DIYNDER DISTANCE TO COVER

PIPE
- INITIAL AIR INLET
- AIR TANK PART

AIR INLET
- AIR FILTER
- CHECK VALVE

CONTROL HANDLE
- SUPPLY COMPRESSED AIR TO THE CYLINDER
- DISCHARGES AIR FROM THE CYLINDER

4-2. CIRCUIT DRAWING
1) AIR FILTER REGULATOR
The filter regulator makes unstabilizing compressed air to proper air pressure and supplies it to the equipment.

2) POST PIPE
Post pipe is installed to the ground with anchor bolts to support the equipment as column and is also air passage as air tank.

3) TURN PIPE
Turn pipe connects post pipe with turn arm as joint. It can be rotated in 360-degree arc on each join part so that it secure work space.

4) TURN ARM
The cylinder rod is combined with wheel in the inside of turn arm and moves within a fixed section. The wire is moved up or down by cylinder’s move.

5) CONTROL HANDLE
Function of control handle
Control handle supplies compressed air to the air cylinder or discharges air from it and lifts up and lowers the workpiece.

---

Main Function
1. Two levers engraved as "UP" and "DN" perform up and down function respectively. UP lever supplies compressed air to air cylinder and hence lifts up workpiece. DN lever discharges compressed air from air cylinder and lowers down the workpiece by its weight.
2. Sp-con-pin adjusts the air quantity of the outside so that it can prevent jumping phenomena which may be occurred by excessive pressure or light weight.

5-1-4. OPERATION
This equipment is operated (up & down) by levers of control kit. The worker rotates arm pipe with minimum man power so that he can move heavy goods very easily within a fixes space.

1) Check list before operation
   • Air fitting part might be closely contacted.
   • Switch off the electric current of equipment.
   • The weight might be hanged on the hook.
   • The hook might be touched on the ground.
   • Don’t press the levers of control handle and check objects push the levers

2) Operation and control
   • Open the valve and control the air pressure becomes 6kgf/cm²
   • Hold control handle with right or left hand and operate the levers slowly with watching for hook’s move.
   • Hang the goods on the hook.
   • Do not lift up more than the specified max weight.

   • Hook moves up while up lever of control handle is pressed
   • Hook moves down while DN lever of control handle is pressed.
   • The speed of hook’s up & down is controlled by rotating speed-control-pin on the side of control handle.
   • The most important function which distinguishes between air balance hoist and electric owe’s is “FLOWING”. The worker can move heavy goods up and down very easily in any height with floating function.
5. OPERATION

5-1. HOW TO OPERATE

5-1-1. PURPOSE
Air Balance arm DSJ-300 with using compressed air is useful to more heavy goods very easily and quickly with minimum man power.
DSJ-300 is new conceptual hoist to use individually without rail system.

5-1-2. SPECIFICATION

<table>
<thead>
<tr>
<th>CHECK POINT</th>
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<td>2336mm</td>
<td>WEIGHT</td>
<td>200Kg</td>
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</tbody>
</table>

5-1-3. STRUCTURE AND NAME OF EACH PART

- TURN PIPE
- AIR CYLINDER
- TURN ARM
- HOSE
- HOOK
- POST PIPE
- CONTROL HANDLE
- AIR FILTER

Rotate in 360-degree arc
Rotate in 360-degree arc
5-2. FOR MAINTENANCES & REPAIR

5-2-1. DISASSEMBLY & ASSEMBLY
- Disassembly and assembly might be safely done by order.
- Do not use it for another purposes and change the structure of equipment at user’s pleasure.

5-2-2. BEFORE USING COMPRESSED AIR
- The minimum pressure which is necessary
  - Make sure that hose nozzles in safe before you put compressed air. If the hose would be shaken by air leakage due to the nozzle is burst or OFF, this is very dangerous.

5-2-3. CAUTION
- Do not operate the equipment during maintenance & repair work.
- Put on safety shoes to prevent injury which may be occurred by sliding or falling during the weight in being moved.
- Do not stand below the weight hanging on the hook and within the limits of falling.
- The weight must be not connected directly to the hook.

5-2-4. REPLACEMENT OF WIRE.
- Watch for the exterior of wire. In case that if is burst, loosen or twisted, replace it with new one.
- Switch OFF air compressor.
- Release the air of cylinder with using control-handle.
- Remove plate on the downside of turn arm(Refer drawing)
- Remove plastic cover which is combined with the end part of turn arm.
- Pull fully wire so that the wheel cam be seen through hole.
- Remove socket bolt which is connected to the cover block of turn arm and take out wheel with wire from pipe.
- Separate wire from hinge-pin and remove wire from pipe.
- Replace wire with suing plate's hole &wheel and reassemble it in the revers order of disassembly.
- Replacement period of wire is normally 1-11/2 years for safety.

5-2-5. SPECIFICATION
- KS A 0401 - WIRE ROPE FOR MECHANICAL CONTROL
• STAINLESS STEEL (SUS304) : 7 × 19 : Ø5

5-2-6. INSPECTION TERM
1) Weekly check point
   • Control-Handle
     - Leakage : Test the leakage with soap bubbles.
     - Damage : Watch for the piston pin pressed owing to the lever part
       damaged or adjustment screw of control pin is damaged.
     - Foreign substance : Watch for the foreign substance is stuck into the lever
       piston parts or hose connection parts.
   • Filter Regulator
     - Damage : Check to case is damaged or not.
     - Water : In case that the water is filled a case, press valve and drain water
       from case.

2) Monthly check point
   • Wire
     - watch for wear, twisted, burst of wire.
   • Filter Regulator
     - Filter : In case that it is dirty or the foreign substance is stuck, replace it
       with new one.
5-3. INSTALLATION & TRANSPORTATION

5-3-1. HOW TO INSTALL

1) Post pipe
   • Stand post pipe on the firm and flat ground.
   • Make holes to the base plate’s bolt holes with hammer drill.
   • After fixing anchor bolts to the holes with hammering, insert washers & nuts to the screw parts and fasten it tightly.

   ! In case of fixing pipe to the ground with anchor bolts, use a level and let the pipe make level to the ground

2) How to combine turn arm
   • Insert O-ring to the groove which is down sine of flange
   • Put on turn-arm to the post’s flange an fit position of lib’s each other.
   • Insert Hexa bolt(m16x90) with plain washer to the flange and fasten tightly plain washer & spring
   • Turn it and test turn-arm works good or not in user’s need. The turning force can be controlled by user’s wit adjusting bolt(M8x15) on the beside of boss-cap

3) Cylinder arm’s combination
   • Put on cylinder body to the arm’s boss and fit position of bracket each other, with adjusting bolt (M10x25)
   • The length of tension bar can be controlled by fastening or releasing of knuckle joint
   • Assemble tension-bar to the connect(joint pin) part of boll and combine them with safety pin after insert joint pin
   • Cut hose properly and connect if to one-touch nipple of the downside of boss.
   • Turn if and test cylinder arm works good or not in your need. The turning force can be controlled by adjusting bolt (M8x15) on the beside of boss-cap.

4) Control part’s combination.
   • Connect straight hose which is connected with control-handle to the nipple of cylinder-arm. Connect black hose to the "UP" and yellow(or blue) to the "DN"
   • Check the black hose is connected to the nipple on the downside of control-handle.
5-3-2. SUPPLY AIR & TEST

- Connect the hose to the compressed air inlet which is fixed to the side of post.
- Open the valve and control the air pressure becomes $7\text{kgf/cm}^2$
- Hold control handle with hand and operate the levers slowly with watching for hook’s move.
- While the hook is being operated from upper to lower limit, fix the length of wire rope properly and fasten tightly wire-clip which is combined with wire.
- In case that the mice of hook is too fast or slow, control the speed of hook with rotating speed-control pin on the beside of control-handle.
- Control the speed of hook with rotating speed-control pin on the beside of control-handle.

5-3-3. TROUBLESHOOTING

This equipment is manufactured under strict quality control system. Therefore no troubles are expected during its operation. But, owing to installation and control problem by user, slight troubles may be occurred as follow:

1) In spite of pressing levers of control handle, the hook is not moved.
   - No compressed air → Supply compressed air.
   - Connection of air hose is wrong → Change connection.

2) Hook’s moving speed is not normal
   - The speed-control-pin of control handle is not normal controlled → Readjust.
   - The pressure of compressed air is of normal
     → Set the pressure of compressed air to 100psi

3) Moving of turn-arm is not normal.
   - Connection part of arm has not properly controlled during assembly
     → Readjust.
5-4. CAUTION

- Only the worker who is well educated in safety and operation for this equipment should operate it.
- The worker should operate it with good condition.
- In case that the hook-clip is bended or damaged, never use this equipment.
- Check the hook is bended or damaged before using equipment.
- Check the equipment is damaged or worn at any time. In case that the equipment is found damaged or worn never use it.
- It is prohibited to use more than one hook to the owe line of wire.
- Never use wire rope as normal rope.
- In case that the wire rope should be perfectly vertical to the weight, the equipment might be operate.
- Never operate the equipment with twisted or matted wire.
- Do not use hook or tool which can not safely fix the weight.
- Do not weld or cut directly the weight which is hanging on the hook.
- Do not lift up more than the specified max weight.
- Do not stand within the limits of weight's falling.
- Air filter should be cleaned to the post pipe focus.
- Never use this equipment for the purpose of moving human being and it is prohibited for men to stand below the weight.
- Nobody must be on the passage way of the weight's move.
- Do not move the weight overhead.
- Do not lift up the weigh during it's moving is not favorable.
- Do not shake the weight which is being hang on the hook.
- Never let the weight hang on the hook during no use of equipment.
- Do not operate the equipment during the wire rope makes seriously noise ad is jammed or tied.
- Stop air supply before repair work.
- Regularly check wire rope and hook and replace them if they are damaged.
- Be well informed of how to operate the equipment before use.
### PARTS LIST

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